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FUNCTIONAL CHARACTERISTICS FORA MINIATURIZED DATA RECORDER WITH PLAYBACKI. GENERAL INFORMATION1. Objective

- a. There is a need for a reliable data recorder which contains its own power source, calibration oscillator and camouflaged microphone; and is entirely portable.
- b. This tape recorder must be able to record on three channels simultaneously.

2. Proposed Service Employment

- a. The recorder shall be capable of being operated aboard any vehicle, such as an aircraft, ship or motorcar.
- b. The recorder shall be capable of being remotely controlled by electrical means.
- c. The recorder shall be used in conjunction with data detecting devices.

25X1
25X13. Functional Characteristics

- a. The miniature data recorder shall be designed to record data, pulse signals, voice and synchronizing signals. It is intended that synchronized data be recorded on two channels while a recording speed reference tone or voice announcement be recorded on the third channel. The recorder must be easily operable by unskilled personnel. Complexity of loading and unloading of the tape must be kept to a minimum.
- b. The monitoring shall be possible during the recording process.

4. Background and/or Related Information

Several similar miniaturized tape recorders are now being produced either for commercial consumption or for the military service, each having one or more of these desired characteristics; none, however, having all.

5. Availability Date

This recorder will be placed in operation in a large number of applications as soon as it is available.

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II. OPERATIONAL CHARACTERISTICS

1. Frequency Response

The frequency response of the recording system over the range of 250 cycles to 10 kilocycles shall vary by not more than plus or minus 3 db on all channels.

2. Distortion

The harmonic distortion of the system shall not be greater than 15% on any channel.

3. Speed Variation

The magnetic tape speed shall be controlled entirely by the speed of the driving capstan. The speed of the recording medium shall be essentially constant with less than 2% flutter and wow.

4. Speed Reference

A speed reference oscillator shall be incorporated in the recorder body, it will be capable of being recorded on the tape at discretion of the operator. The frequency of the reference oscillator should be 1,000 cycles and shall maintain a stability of plus or minus 1 part in 50,000. (Other frequencies will be considered providing the same tolerance is observed.)

5. Sensitivity

The data channels of the recorder shall be constructed to permit the recording of input signals at a minimum strength of 100 millivolts. The channel which is used for voice announcement or speed reference tone shall have sufficient sensitivity to obtain an intelligible recording of a normal conversational voice level

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6. Recording Time

The recorder shall be able to record continuously for 60 minutes.

7. Special Features

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III. PHYSICAL CHARACTERISTICS

1. Limiting Form Factors

The recorder including all protuberancies shall have dimensions not exceeding 5" x 3" x 1-1/2".

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2. Case Construction

The recorder shall be encased in a suitable magnesium or aluminum alloy shell.

3. Controls

The following controls shall be available on the outside of the case:

- a. One off-monitor-record switch
- b. Two gain switches
- c. One button for the reference control oscillator

4. Connectors

The following connections shall be available on the outside of the case:

- a. Two data input connectors
- b. One microphone input connector
- c. One monitor jack

5. Power Supply Considerations

The recorder shall contain batteries capable of providing continuous motor operation for twenty hours and continuous electronic operation for 100 hours.

6. Construction Requirements

- a. The recorder shall be able to operate in the presence of the normal vibration encountered aboard an aircraft. It should be able to withstand moderate drop.
- b. The recorder shall be able to operate in any orientation.
- c. The recorder shall operate quietly with a minimum of motor whirr or whine.

7. Playback

A rack mounted playback unit shall be provided to faithfully play the tape at its recorded speed.

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